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EDITORIAL ANALYSIS

Drones and the Future of War — India's Defence Manufacturing Imperative

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SUBJECTS COVERED**SECURITY & DEFENCE****ECONOMY****GS PAPERS****GS3****GS2****CURATED & WRITTEN BY****Bharat Choudhary**

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Drones and the Future of War — India's Defence Manufacturing Imperative

Hindustan Times 20 March 2026

GS3

GS2

HT Hindustan Times

MAINS RELEVANCE:

GS Paper 3

GS Paper 2



INTERVIEW ANGLE

"Drones have fundamentally altered modern warfare — as seen in Ukraine, West Asia, and Sudan. India's drone policy is spread across multiple ministries and the PLI scheme has made a start. But can India become a global drone manufacturing hub by 2030 while still depending on imports for critical components? What is the strategic gap?"

WHY IN NEWS

Defence Minister Rajnath Singh stated that ongoing conflicts in West Asia and Ukraine have conclusively demonstrated that **drones and counter-drone technologies** will define future warfare — and that India must urgently position itself as a **global drone manufacturing hub by 2030**. The Hindustan Times editorial analyses India's drone strategy gaps and what structural changes are needed.

DRONES IN MODERN CONFLICT — THE STRATEGIC LESSON

The conflicts of 2022–2026 have delivered an unambiguous message to defence establishments worldwide:

Ukraine (2022–ongoing): Both Ukraine and Russia have used drones at unprecedented scale:

Shahed-136 loitering munitions (Iranian-supplied to Russia): Used to strike Ukrainian power infrastructure at scale; cheap (~\$20,000/unit) and attritable

FPV (First-Person View) drones: Ukrainian forces converted consumer drones into anti-tank munitions; cost \$500 vs. \$2–5 million for a main battle tank

Drone-on-drone combat: Electronic warfare and anti-drone drones have created a new tactical domain

West Asia (2024–2026): Houthi drones struck Saudi Aramco's Abqaiq facility (2019 precedent); in the 2026 escalation, Iranian-supplied Shahed variants and ballistic missiles struck Gulf energy infrastructure including Qatar's Ras Laffan and UAE's Abu Dhabi LNG terminal.

Strategic conclusion: Cheap, mass-produced drones — whether kamikaze (loitering munitions) or reconnaissance — have **equalised asymmetric conflicts** and made expensive legacy platforms (tanks, frigates, fighter aircraft) vulnerable in ways that transform the calculus of military deterrence.

INDIA'S DRONE LANDSCAPE — CURRENT STATE

INDIA'S DRONE ECOSYSTEM (CIVIL + MILITARY):

Category	Status
Civil drone market (2025-26)	~\$1.8 billion; growing ~25%/year
Military drone procurement	MQ-9B Predator (31 units from US, ~\$4 billion deal approved 2023)
Indigenous armed drone	CATS Warrior (HAL/DRDO — in development; delayed)
Border surveillance drones	DRDO's Rustom-II (MALE UAV) — limited operational status
PLI scheme for drones	₹120 crore incentive; ~23 beneficiaries approved
Defence corridors	UP (Lucknow–Agra–Aligarh–Kanpur) + Tamil Nadu (Chennai–Coimbatore–Salem)
iDEX drone challenges	Multiple DISC (Defence India Startup Challenge) rounds for counter-drone + ISR

The gap: India can assemble drones — but **key components** (motors, electronic speed controllers, flight controllers, LiPo batteries, sensors/EO/IR payloads) are predominantly imported from China. The drone supply chain dependency mirrors the semiconductor dependency — and is a strategic vulnerability.

CURRENT COUNTER-DRONE ECOSYSTEM:

VSHORAD (Very Short-Range Air Defence): Igla-S MANPADS (Russian); Akash-1S; pending MANPADS procurement

Hard-kill systems: L-70 anti-aircraft guns upgraded with target acquisition radar

Soft-kill: Jammers — DRDO's Samyukta EW system; commercial jammers (limited)

C-UAS policy: No unified counter-drone doctrine; patchwork of Army, Air Force, and CISF deployments at critical infrastructure

INDIA'S DRONE POLICY FRAMEWORK

Drone Rules, 2021 (MoCA/DGCA):

- Replaced the CAR 1.0 drone regulations
- Simplified airspace classification (Green/Yellow/Red zones)
- Mandatory SIM-based no-permission-no-takeoff (NPNT) protocol
- Liberalised import for R&D purposes

PLI Scheme for Drones (2021):

- Ministry: MoCA (Civil Aviation), coordinated with MeitY and MoD
- Budget: ₹120 crore over 3 years
- Beneficiaries: Manufacturers and drone component makers; 23 companies approved (2022-23)
- Target: India to be a global drone hub by 2030

Defence Acquisition Policy (DAP) 2020 — Drone Provisions:

- Category IC (Make in India): Preference for domestically manufactured defence drones
- iDEX: Innovation for Defence Excellence — startup-focused procurement for drone technologies
- DRDO partnerships: HAL's CATS (Combat Air Teaming System) — mother-daughter drone concept; CATS Warrior (armed loyal wingman drone) in development

Drone Shakti Initiative:

- Announced in Union Budget 2022-23
- Promotes startups in the drone ecosystem through DPIIT and MoCA
- 25 “drone schools” set up; curriculum integrated with engineering institutions

THE EDITORIAL'S CORE ARGUMENT

The Hindustan Times editorial identifies **three structural gaps** in India's drone strategy:

1. POLICY FRAGMENTATION

Drone policy in India spans:

- MoCA (DGCA):** Civil airspace, licensing, registration (Digital Sky platform)
- MoD / DAP:** Military procurement, iDEX, defence corridor investments
- MeitY:** Semiconductor and electronics ecosystem for drone components
- DPIIT:** PLI scheme administration, startup ecosystem
- MHA:** Security of critical infrastructure, VVIP protection drone counter-measures

There is no **single unified drone authority** — creating regulatory overlap, delayed approvals, and inconsistent standards. The editorial recommends a **National Drone Authority** on the lines of India's space reforms (IN-SPACe for the private space sector).

2. COMPONENT INDIGENISATION — THE CHINA DEPENDENCY

India's drone manufacturers (ideaForge, Throttle Aerospace, Garuda Aerospace) are competitive in final assembly — but the underlying supply chain is:

Motors and ESCs: Predominantly Chinese (T-Motor, DJI supply chain)

Flight controllers: Pixhawk (US) or Chinese clones

Batteries: LiPo from China; Li-S (next-gen) not yet manufactured in India

Sensors: EO/IR cameras — Israeli (Elbit) or US (FLIR) for military; Chinese for civilian

Strategic risk: In any China-India conflict scenario, this supply chain collapses immediately. India cannot fight a drone war with drones dependent on Chinese components.

3. COUNTER-DRONE DOCTRINE GAP

India has no unified, publicly articulated **counter-drone doctrine**. The Chief of Defence Staff's office has initiated theaterisation — but the C-UAS (Counter-Unmanned Aircraft Systems) role is not yet assigned to any Theatre Command.

Immediate priorities per the editorial:

Fast-track CATS Warrior development (stuck in R&D for 5+ years)

Mandate minimum domestic content (50%+) for military drone procurement under DAP 2020

Create a **Defence Drone Technology Fund** under iDEX with ₹500 crore+ corpus specifically for component indigenisation

KEY DRONE PROGRAMMES — UPSC REFERENCE

Programme	Details
MQ-9B Predator (SeaGuardian/SkyGuardian)	US General Atomics; 31 units; ~\$4 billion; FMS route; delivery 2025-28
CATS Warrior	HAL/DRDO; loyal wingman armed drone for Su-30MKI; prototype in testing
Rustom-II (Tapas-BH 201)	DRDO MALE UAV; 28–30 km altitude; development delayed multiple times
Heron Mk-II	Israel Aerospace Industries; leased/bought for LAC surveillance
ideaForge SWITCH	India's first military-grade quad; inducted by Indian Army for ISR in Ladakh
Garuda Aerospace	Tamil Nadu startup; largest drone maker by volume; civil + agri drones

UPSC RELEVANCE

PLI scheme for drones (₹120 crore, MoCA), Drone Rules 2021 (NPNT, Digital Sky), iDEX (Innovation for Defence Excellence), Defence Corridors (UP + Tamil Nadu), CATS Warrior (HAL/DRDO), MQ-9B Predator (US General Atomics, 31 units), Rustom-II/Tapas-BH 201 (DRDO MALE UAV), Drone Shakti Initiative (Budget 2022-23), IN-SPACE (space sector analogy for single-window authority).

Mains GS3: *Defence modernisation — drone warfare, counter-drone doctrine, indigenisation (DAP 2020), Make in India in defence, PLI scheme impact, China dependency in supply chains, iDEX for startups, Defence Production Policy 2020.*

★ FACTS CORNER — KNOWLEDGEPEDIA
INDIA'S DRONE POLICY:

Drone Rules, 2021: MoCA/DGCA; NPNT (no-permission-no-takeoff); Digital Sky platform
 PLI Scheme (Drones): ₹120 crore; 3 years; 23 companies approved; goal: drone hub by 2030
 Drone Shakti: Budget 2022-23; 25 drone schools; startup ecosystem under DPIIT + MoCA

KEY MILITARY DRONE PROGRAMMES:

MQ-9B Predator: US General Atomics; 31 units (~\$4 billion); FMS; delivery 2025-28
 CATS Warrior: HAL/DRDO loyal wingman armed drone; in development
 Rustom-II (Tapas-BH 201): DRDO MALE UAV; 28-30 km altitude; delayed
 Heron Mk-II: Israeli; ISR on LAC
 ideaForge SWITCH: India's first military-grade quad UAV; Indian Army, Ladakh deployment

DEFENCE CORRIDORS:

Uttar Pradesh: Lucknow–Agra–Aligarh–Kanpur–Jhansi; target ₹50,000 crore investment
 Tamil Nadu: Chennai–Coimbatore–Salem–Tiruchirappalli; target ₹20,000 crore

IDEX (INNOVATION FOR DEFENCE EXCELLENCE):

Launched: 2018 (under DPSUs and MoD)
 DISC (Defence India Startup Challenge): Multiple rounds for drone, counter-drone, AI
 Budget: ₹498 crore corpus (iDEX Trust Fund)

GLOBAL DRONE LESSONS (2022-26):

Shahed-136 (Iranian): Loitering munition; ~\$20,000/unit; used in Ukraine, West Asia
 FPV drones: \$500 consumer drones converted to anti-tank weapons (Ukraine)
 Houthi drones: Struck Saudi Aramco (2019), Qatar Ras Laffan, UAE facilities (2026)

OTHER RELEVANT FACTS:

DJI: China's dominant commercial drone maker (~70% global market share); banned from US military use
 DAP 2020: Defence Acquisition Policy; Category IC (Make in India); minimum 50% indigenous content for many systems
 CDS: Chief of Defence Staff — Lt Gen Anil Chauhan (appointed Oct 2022); overseeing theaterisation + C-UAS doctrine development
 VSHORAD: Very Short-Range Air Defence — Igla-S MANPADS, Akash short-range; India's layered air defence

Sources: Hindustan Times, PIB, Ministry of Defence

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